

CLAIMS:

1. A mobile communication terminal comprising a  
loudspeaker with a non-flat frequency response, an  
5 amplifier and an equalizer for at least partially  
compensating the non-flat frequency response of said  
loudspeaker through frequency selective attenuation,  
characterized by comprising means for decreasing said  
frequency selective attenuation to increase the volume of  
10 the sound reproduced by said loudspeaker when a maximum  
amplification by said amplifier has already been reached.
2. A mobile communication terminal according to claim 1,  
characterized in that said frequency selective  
15 attenuation is decreased by decreasing the attenuation  
for all frequencies reproduced.
3. A mobile communication terminal according to claim 1  
or 2, characterized in that said frequency selective  
20 attenuation is decreased by changing the characteristic  
of said equalizer.
4. A mobile communication terminal according to claim 2  
or 3, characterized in that said means for decreasing  
25 said frequency selective attenuation are arranged to  
gradually decrease said frequency selective attenuation  
with increasing volume setting.
5. A mobile communication terminal according to claim 4,  
30 characterized in that said means for decreasing said  
frequency selective attenuation are set to obtain  
substantially zero attenuation of all frequencies  
reproduced at a maximum volume setting.
- 35 6. A mobile communication terminal according to claim 4  
or 5, characterized by comprising means for adjusting the

amplification level of said means for amplifying, said means for adjusting the amplification level being arranged to maintain the amplification at a maximum level when said volume setting is reduced until said means for  
5 decreasing said frequency selective attenuation has increased the attenuation factor to a level at which a substantially linear frequency response of said loudspeaker is obtained.

10 7. A mobile communication terminal according to any of claims 3 to 6, characterized in that said means for adjusting the amount of said frequency selective attenuation are arranged to adapt the profile of the frequency response of the loudspeaker system increasingly  
15 to the hearing curve of the human ear, preferably as defined in ISO 226:1987, with decreasing volume setting.

8. A mobile communication terminal comprising a loudspeaker with a non-flat frequency response, an  
20 amplifier and an equalizer for at least partially compensating the non-flat frequency response of said loudspeaker through frequency selective attenuation, characterized in that said audio system comprises means for adjusting said frequency selective attenuation to  
25 increasingly adapt the frequency response of said loudspeaker to the human hearing curve with decreasing volume setting.

9. A mobile communication terminal according to claim 8,  
30 characterized in that said means for adjusting said frequency selective attenuation increasingly adapt the frequency response of said loudspeaker to normal equal-loudness level contours as defined in ISO 226:1987 with decreasing volume setting.

10. A mobile communication terminal according to claim 8 or 9, characterized by comprising means for decreasing said frequency selective attenuation to increase the volume of the sound reproduced by said loudspeaker when a maximum amplification by said amplifier has already been reached.

11. A sound reproduction system for a mobile communication terminal comprising a loudspeaker with a non-flat frequency response, an amplifier and an equalizer for at least partially compensating the non-flat frequency response of said loudspeaker through frequency selective attenuation, characterized in that said audio system comprises means for adjusting the frequency response characteristic of said equalizer depending on the type of audio signal reproduced.

12. A sound reproduction system according to claim 11, characterized in that said type of audio signals comprise speech signals, speech signals for use with a headset, speech signals for use with a loudspeaker, music signals, ringing tones and alarms.

13. A sound reproduction system according to claim 11, characterized by comprising means for automatically adjusting the frequency response of said equalizer when a speech signal is reproduced to obtain a substantially flat frequency response of said loudspeaker.

14. A sound reproduction system according to claim 11, characterized by comprising means for automatically adjusting the frequency response of said equalizer when a speech signal is reproduced to obtain a frequency response of said loudspeaker that substantially corresponds to normal equal-loudness level contours as defined in ISO 226:1987.

15. A sound reproduction system according to claim 11,  
characterized by comprising means for automatically  
adjusting the frequency response of said equalizer when a  
5 music signal is reproduced to obtain a low attenuation of  
the low-frequency part of the sound reproduced.

16. A sound reproduction system according to claim 11,  
characterized by comprising means for automatically  
10 adjusting the frequency response of said equalizer when a  
music signal is reproduced to obtain a high attenuation  
of mid-frequency part of the sound reproduced.

17. A sound reproduction system according to claim 11,  
15 characterized by comprising means for automatically  
adjusting the frequency response of said equalizer when a  
ringing signal or an alarm signal is reproduced to a  
substantially zero attenuation of all frequencies of the  
sound reproduced.

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18. A method of controlling the volume of sound produced  
by an audio system for a mobile communication terminal,  
said audio system comprising a loudspeaker with a non-  
flat frequency response, means for amplifying an audio  
25 signal, an equalizer for at least partially compensating  
the non-flat frequency response of said loudspeaker by  
frequency selective attenuation and input means allowing  
user input for increasing or decreasing the volume,  
comprising the steps of:

30 -increasing the amplification of said audio signal when  
input for increasing the volume is received and a maximum  
amplification has not yet been reached,  
-decreasing the frequency selective attenuation of said  
equalizer when input for increasing the volume is  
35 received and the maximum amplification has already been  
reached,

-increasing the frequency selective attenuation of said equalizer when input for decreasing the volume is received and the frequency selective attenuation is below said normal level, and

- 5 -decreasing the amplification of said audio signal when input for decreasing the perceived loudness is received and the attenuation level of said equalizer is on said normal level.

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